

# April 2021 Newsletter

Next up on Zoom  
(get link on BIARC ListServe)

Saturday, April 10  
Noon: BIARC Board meeting  
2 p.m.: Membership gathering

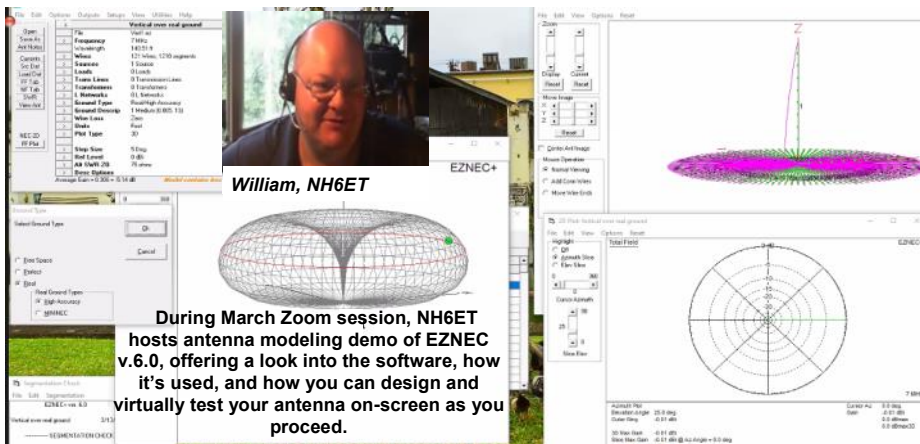
## Big Island Amateur Radio Club

### From new-school ...

BIARC is making impressive progress toward extending our repeater reach from Pepeekeo to Kulani, said President William Polhemus, NH6ET, as he opened the March 13 membership gathering on Zoom. The board of directors has approved funding for needed equipment, and the future for mesh networking is bright, said William and Treasurer Tony Kitchen, WH6DVI.

"William's not kidding," added Tony. "The voice repeat-

*Continued on Page 4*



During March Zoom session, NH6ET hosts antenna modeling demo of EZNEC v.6.0, offering a look into the software, how it's used, and how you can design and virtually test your antenna on-screen as you proceed.

### ... to old-school

#### The Hurricane Iwa Chronicles

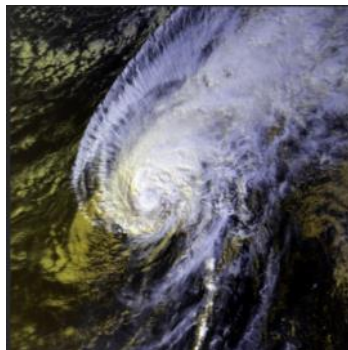
*By Hank Kaul, KH6HAK*

Our resident Gutenberg descendant asked me to write this memory down for the newsletter. It is absolutely the best example I know of ham radio service in an emergency.

In 1982 I was an engineer at KHON TV2 in Honolulu. I had just built the "SCOOP" microwave van to bring live TV to the streets of Honolulu.

Remember that in 1982 there were no cellphones, no internet, no inter-island fiberoptic links, and

#### When all else fails, ham radio works



*Continued on Page 2*

**Hurricane Iwa, 1982**



**Johnny Cash**

A crack security service USAF Morse Code operator in West Germany during the Cold War, Cash was the first to learn of, and report on, the death of Soviet Premier Leader Joseph Stalin.

### ... to older-school

#### The Man in Khaki

Johnny Cash, The Man in Black, was a Morse Code Intercept Operator during the Cold War.

Born February 26, 1932 in Kingsland, Arkansas to Ray Cash and Carrie Cloverree, he was the fourth of seven children.

In 1950, at the age of 18, Cash did what many young men of the time did, he enlisted in the United States military, specifically the Air Force, and was shipped off from his home in Arkansas to

*Continued on Page 3*

## KH6HAK remembers Hurricane Iwa

no satellite TV. Sounds like the dark ages now.

Barbara Marshall was the first to introduce SCOOP On-Air. Barbara was the "Assignment Editor" of the Channel 2 newsroom. She decided what stories they would work on each day, and assigned reporters and camera crews to the various stories that needed to come together for the 6 p.m. news.



**Anchor Joe Moore.**

Barbara was very opinionated, and stern in her command of the newsroom. She would use two bags of Kona Coffee in the coffeepot and couldn't wait for the pot to fill, so she would put her cup under the drip to catch the first, strong, Kona syrup coming down. By the time the 6 p.m. news launched, someone usually had to peel her off the ceiling!

Let's travel back to Tuesday, November 23, 1982: Overnight a tropical depression south of the islands had coalesced into a hurricane and turned north. At 0800 the weather bureau had issued a HURRICANE WARNING for Niihau and Kauai, with a HURRICANE WATCH for Honolulu and Oahu. Projected strike is at 0800 tomorrow — 24 hours away.

As I walk into the newsroom that morning it is sleepy-eyed business as usual. Nobody is thinking hurricane. So I stand in the middle and start talking loudly about the coming hurricane, preparing, storing food, water, and fueling up the cars.

Barbara turns up her nose and says deridedly, "Oh, who wants to do a story about the weather? It will turn away. They always turn aside. We have better things to do."

"Barbara!", I say, "The weather service doesn't issue a WARNING unless it is a sure thing! They don't want egg on their face if it's wrong. I guarantee you that before this day is out, you will be horribly inconvenienced by the weather, and we could be facing a power outage."

Barbara glares at me for a long time. How dare this young engineer challenge her in HER newsroom! "Get out of my newsroom, Kaul!" is her response.

So I go back to the engineering shop. An hour later, after the department managers have had their morning meeting, my engineering manager calls me to his office. He is from the Midwest — tornado country — just like me. He knows what's coming. He says to me, "You are a troublemaker! We in engineering are going to get ahead of the newsroom and prepare to bail them out. Get the SCOOP van gassed up, get some extra cables onboard, and get yourself some box lunches and drinks so you can live in the van until tonight. Go out to the airport and find a spot near the tower where you can get a microwave signal back here, and pull a long cable up to the third floor where the NOAA Weather Service office is."

"Will do!" I reply as I get busy.

The only live satellite images from the GOES (Geostationary Operational Environmental Satellite) weather satellites are there at the weather office, and we need to broadcast them. (Remember, no weather radar, no internet ... dark ages back then.) The weather satellites were downlinked at Barking Sands, Kauai, and I believe it was a telco data link that sent the FAX type images to the display that updated about every five minutes. So a sequence of images would display as almost live-motion video.

The newsroom finally decides this is the big story of the day, and sends reporter/camera crews out to meet me, hook up, and do live cut-ins throughout the day.



**In the wake of the storm.**

Meanwhile, the storm gathers speed. Now landfall is predicted on Kauai at 6 p.m. local time. We are the first and only station with the satellite images throughout the day. By 4 p.m. things are getting nasty as the hurricane approaches Kauai. At the NOAA weather office we also have a young ham operator, George, KH6JUJ, with a 2 meter handy talkie. He establishes a link thru a repeater up in the Waianae mountains that was put up by some GTE Hawaiian Tel (remember them?) hams at a telco site that had emergency power.

On Kauai, emergency officials are sheltering in the basement operations center of the Kauai County building, with a ham operator on duty there also. One of the first reports we get from him is that an entire palm tree, uprooted, has blown thru the front door of the county building and is lying in the hallway!

Just as the eye of Iwa is coming ashore on Kauai, ALL communications with the island go dead. Microwave links on their end have been blown askew. No telephone. No government radio service. NOAA has lost the weather data feeds, and the satellite images are dead.

The lead forecaster at the NOAA office asks the ham operator for comms to Kauai, and George still has his link working, so he asks if they have a barometer at the Kauai ops center. "Yes," comes the reply, so the NOAA forecaster asks for a barometric pressure reading now, and every five minutes thereafter, and charges the ham operators with getting that information to him.

He proceeds to manually make a map-chart of Kauai with the projected track of the eye center as it approaches. Even though blind, he was tracking the eye as it crossed over the island by reading the pressure gradient as it passed, and manually drawing position reports on his map-chart of the path — all thanks to ham radio.

I was impressed. This was the ONLY data that NOAA had from the hurricane at this point. Meanwhile, on Oahu, things are getting bad and we also have 75 mph hurricane winds. The airport is closed.

At 6 p.m., we come on the air with the news and report the blackout of Kauai. At 6:23 p.m., during our live report, the lights at the weather service office go out. The airport switches to emergency power. Our TV report continues, as we are battery powered, but I look out and see sections of Oahu going dark as the outages spread. I radio in to the station that the power outage is approaching and they will be off the air within two minutes. And it happens.

The newsroom radios me that they are sending one more crew out to us to replace our present overworked reporter and camera. No reporters are available, so Barbara Marshall is coming along with a camera operator. I wonder at that as the hurricane is hitting us full force.

So I have lots of downtime to hang out with George and tell him I am also a ham operator. I encourage him, praising him for doing good work.

The news crew takes way too long to get to us. The newsroom has not heard from them either, and folks are worried. No cell-



# Celebrate World Amateur Radio Day on Sunday, April 18

World Amateur Radio Day (WARD) 2021 is Sunday, April 18. On that day in 1925, the International Amateur Radio Union (IARU) was formed in Paris.

Today, the IARU is a worldwide

federation of national amateur radio organizations. The IARU has chosen "Amateur Radio: Home but Never Alone" as its WARD 2021 theme, acknowledging the many ways throughout the COVID-19 pandemic that amateur radio has re-

mained a welcome respite for its variety of activities and opportunities -- even helping overcome online fatigue and social isolation. ARRL has info to help all radio amateurs start planning for World Amateur Radio Day.

## Cash decoded

From Page 1

Lackland Air Force Base in San Antonio, Texas.

While at Lackland, he met what would be his future first wife, Vivian Liberto, at a roller rink, but the couple wouldn't be married for another four years. After dating Vivian for only three weeks, Johnny received his deployment papers and was shipped off to a base in Landsberg, West Germany for a three-year tour. The base served as one of the forward outposts in the outbreak of the Cold War the world found itself in after World War II in the face of Soviet aggression. During his enlistment period, he rose to the rank of Staff Sergeant and became a crack Morse Code operator in a Security Service unit. Because Cash showed such skill at deciphering Morse Code, he was put in a prominent seat at his Landsberg post to listen in on Soviet communications.

The Landsberg, Germany experience was an important marker in the life of The Man in Black. During his three years at the base, he



exchanged hundreds of love letters with Vivian Liberto, and formed his first-ever band, The Landsberg Barbarians. Though many people attribute Cash's inspiration for writing one of his biggest hits, "Folsom Prison Blues," to seeing the infamous prison first-hand, he actually wrote the song while stationed in Landsberg, and after seeing the film "Inside The Walls of Folsom Prison." Johnny felt like he could relate to life in the clink because of his top-secret military position. The sensitivity of his job necessitated that he couldn't talk to anyone about what he did, specifically, not even to his sweetheart back in Texas, and Johnny's off-base privileges were severely limited.



### Station HYP0

Celebrating the Past, Present and Future of Navy Cryptology

But all this secrecy also led to one of his biggest accomplishments. While manning his post on March 5, 1953, Staff Sgt. Johnny Cash transcribed what would be an extremely important communique from the Russians. At the time, Soviet Premier Leader Joseph Stalin was in failing health. As the man at the head of the Soviet Empire, Stalin's health status was of critical importance to the U.S. intelligence community and to all Western powers. While monitoring the Soviet Morse Code chatter on March 5, Cash became the very first American to hear of the death of the Soviet supreme leader. Cash then relayed the important info to his superiors, and the rest is history.

Of course, Johnny Cash couldn't tell anyone of his accomplishment until years later because of the top-secret nature of his job, and eventually the fact would just become a footnote of history to Johnny's more famous musical efforts.

– courtesy <https://stationhypo.com>

From Page 2

## KH6HAK remembers Hurricane Iwa

phones back then, remember. I am instructed to report as soon as they show up... if they do.

In those days, H1 freeway supports in the airport area were still under construction, and the area was a virtual swamp. The news car had stalled in deep water at the Puuloa intersection. The crew had no choice but to walk the rest of the way, carrying a camera case, with Barbara slinging a tripod over her shoulder... in a 75 mph hurricane driving rain!

When they finally come dragging

in like drowned rats an hour later, I radio back to the newsroom that they are safe, at least. Barbara is sopping wet, but I get in her face and say, "So, Barbara, are you here to do a story about the weather?" She glares at me, and I swear there is steam rising from her. Through clenched teeth she growls, "SHUT UP, KAUL!" So I do.

I was the prophet from hell, as far as she was concerned. But I never have forgotten how, "When all else fails, ham radio works." Even for tracking a hurricane in the blind for the NOAA weather service.

I'll shut up now.



# New-school hamming From Page 1

er and digital systems committees” are making great strides.

Tony also offered an update on the emergency communications presentations being planned for the club. When it comes to em-comms, “there are a lot of moving parts,” he noted. So, over the next few months, the club will be treated to a series of 15-minute programs, each covering a “little slice” of that big topic.

Examples would include The Auxiliary Communications Service, or ACS (a program created to supplement government emergency communications with professional, unpaid volunteer staff) under the auspices of the Hawaii County Civil Defense Agency; the VOAD group (Voluntary Organizations Active in Disasters); how local hams interface with ARES (Amateur Radio Emergency Service, which consists of licensed amateurs who have voluntarily registered their qualifications and equip-

ment, with their local ARES leadership, for communications duty in the public service when disaster strikes); the coordination of repeater and frequency usage when disaster strikes, and more.

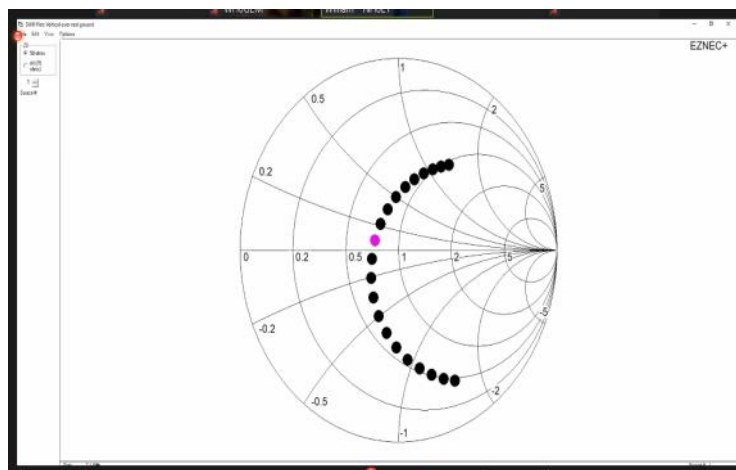
Tony said he is impressed with how hard these various entities are working on behalf of the public.

The upcoming sessions also will include some practice exercises involving message handling for emergency communications using official forms required in such circumstances.

As an example, Vice President Jim Huntley, WH6FQI, discussed the VOAD group and its repeater (see accompanying graphic on Page 8). This is not a casual repeater, he pointed out, and its monthly hour-long practice nets are quite structured.

“This is the repeater of last resort in a large-scale disaster,” William added.

The program for the March session was an antenna modeling demo of EZNEC



v.6.0. William offered a look into the software and showed how it’s used, how you can design and virtually test the antenna on-screen as you proceed.

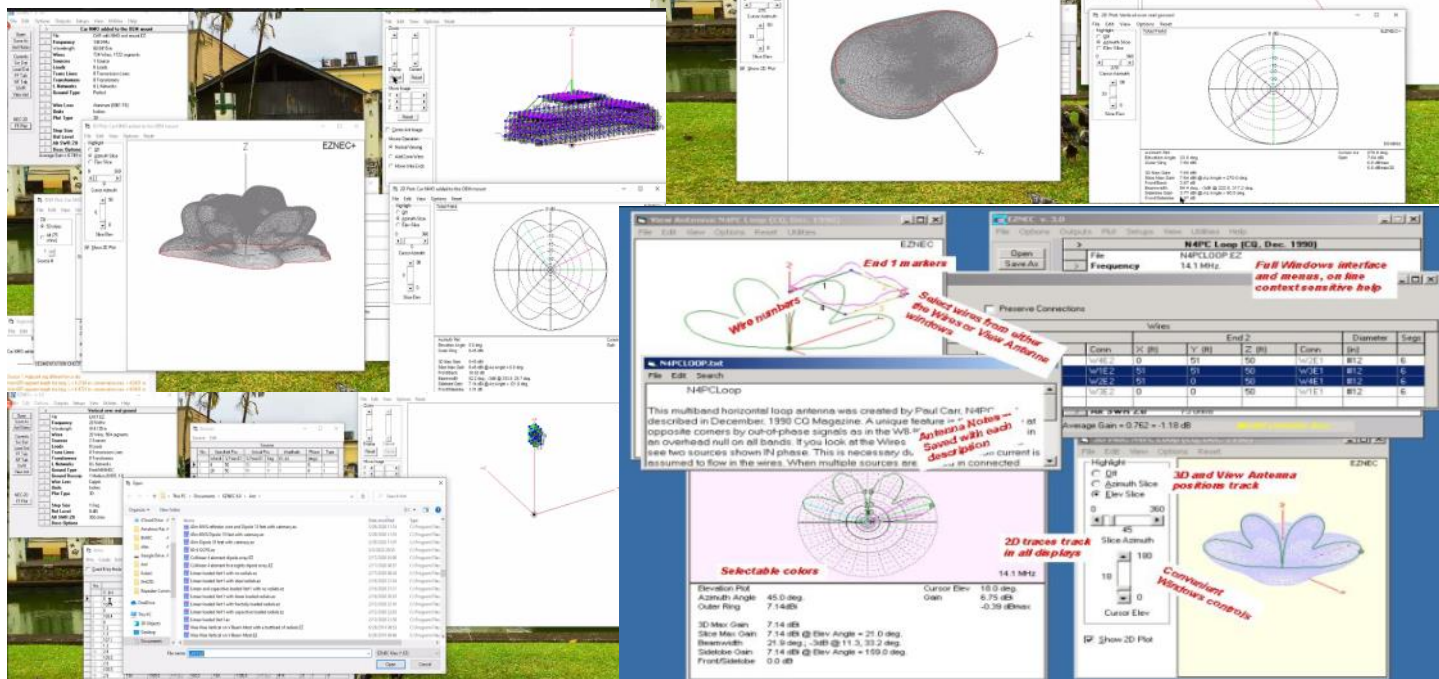
The EZNEC programming also can help you find out “the best-case scenario for an antenna you have.”

As his presentation continued, he turned to a couple of antennas discussed at our February Zoom meeting. He built the “classic Moxon” on screen using the EZNEC program. The six-meter unit is “a dead simple antenna to

build,” he said.

And he showed how to put together the ten-to-six-meter dual band skeleton antenna built and discussed previously by Roy Kunishige, WH6FYK. Several of the members active on the weekly Wednesday night BIARC Tech Net have been building this antenna.

William also showed us the complex wireframe modeling he worked on for his vehicle, and another for the roof of his home. This all involves “modeling additional features beyond the antenna.”





## Memos from members:

### Programming UHF repeaters into radios

Remember - when programming UHF repeaters (440 MHz) into your radios; program your radios to receive low and transmit high.

— Les, K0BAD

BIARC mailing list, Home: <http://mailman.qth.net>

### Update on battery shipments

Subject: Proposal for bringing radio batteries on a surface shipment via Battery Bills.

I worked with Issac at Battery Bills and he has one supplier that offered to ship the batteries ("if they we're sent to them in one shipment"). That plan is pretty unworkable with the way the various radio companies are set up to ship when ready. So the recommendation for now is to go through Ham Radio Outlet for any radio battery order.

— Jim Tatar,  
WH6EMN

### KH7DQ announces next tech class

Doug Wilson, KH7DQ, announces that the next Technician License Preparation Class via Zoom begins on April 21. Folks interested in taking this class and getting licensed are invited to contact Doug ([douscelle@aol.com](mailto:douscelle@aol.com)).

### [BIARC] Kulani VHF vs UHF

As many of you know, I am a big fan of digital voice — especially System Fusion. Nevertheless, now that several people are using the C4FM UHF repeater on Kulani, I am hearing many people making comments about the digital vs analog repeaters that are more accurately VHF vs UHF comparisons.

So here are some of my thoughts:

1. If you are listening on a repeater to another repeater user and the signal of the repeater varies in strength; the path between you and the repeater is varying.

2. If you are listening on a repeater to another repeater user and the noise on the speaker's signal increases and decreases (even though the repeater signal is a constant level); the path between the speaker and the repeater is varying.

3. If you have solid communications with a handheld from inside a car on UHF but not on VHF; that is a characteristic of the different bands. Because of their size in comparison with a wavelength, car windows are more transparent to UHF than VHF signals. This is also true in marginal areas when traveling amongst tall buildings. UHF signals tend to bounce around more - and get into those shadow spots better — than VHF signals. And this has nothing to do with the type of signal - digital or voice.

4. On the margins, analog voice signals — once they drop below the full quieting threshold - become noisy but copiable — until they are too noisy.

5. On the margins, digital voice signals remain full quieting - until they are too noisy - at which point they become suddenly uncopiable.

6. Both analog and digital signals have to deal with phase distortion/fading issues. Analog signals often display this as "picket fencing." Digital signals deal with such issues with their "forward error correcting" ability. The better digital vocoders have better forward error correction abilities. DMR, System Fusion, and P-25 use the same vocoder. D-Star uses an earlier vocoder with less forward error correcting ability. Whenever the forward error correcting ability of a vocoder is exceeded by phase distortion/fading issues, you will hear pixelization in the received signal — and it is darned irritating!

7. The UHF frequencies are less subject to the particular interference issues that the VHF system is on Kulani. Thus, the Yeasu repeater is not by definition "better" than the 146.76 repeater. So — keep in mind — some of the differences you are hearing between the two Kulani repeaters are because of the different bands that they operate on, and some are because of the different voice schemes. Have fun on System Fusion.

— Les, K0BAD

BIARC mailing list, March 29



ARRL the national association for amateur radio

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# BIARC Executive Board Meeting

March 13, 2021

## A. Begin Meeting.

1. Call to Order by President Polhemus at 1201.
2. Quorum Call

Board members: Leslie Hittner, Tony Kitchen, Paul Ducasse, James Huntley, William Polhemus, Jim Sugg, Bob Schneider (late)

Guests: Glenn, AH6IO

3. Secretary's Report and Minutes (01/09/2021)

William **moved** and Tony **seconded** to approve the Minutes of the January meeting as published. Motion **passed** with no objections.

4. Treasurer's Report:

In addition to his written reports, Tony noted that there were currently 55 members and that this was close to our level of membership in February 2020.

William **moved** and Leslie **seconded** to approve the Treasurer's Report subject to audit. The motion **passed** with no objections.

## B. Committee Reports

1. Digital Systems – written Report attached. No action items.  
There was a fair amount of discussion about communications issues within ARDEN project in the state. Jim Sugg will attempt to work out the communications issues. No direct action was taken by the Board.
2. Education and Outreach – written report attached. No action items.
3. Operating Activities – no report.
4. Program – oral report given. No action items.
5. Public Service Communications – written report attached. No action items.
6. Voice Repeaters – oral report given. No action items.

A new UHF repeater is being activated on Kulani. The repeater will transmit on 444.600 MHz and receive on 449.600 MHz. This repeater will run C4FM digital.

Bob Schneider arrived.

## C. Old Business

1. 2021 Executive Board Goals and Objectives



Leslie **moved** and William **seconded** to lay on the table pending William's proposal in March. Motion **passed** with no objections.

#### **D. New Business**

##### **1. 2021 Committee Memberships and Chairs**

William **moved** and Tony **seconded** to approve David Miller to the PSCC Committee. Motion **passed** with no objections.

Committee Membership:

- **Public Service Communications Committee:** Tony Kitchen (Chair), Leslie Hittner, Paul Ducasse, David Miller
- **Operating Activities Committee:** Roy Kunishige (Chair), John Bush, John Bonewitz, Joe Rosenbaun, Paul Ducasse
- **Programs Committee:** James Huntley (Chair), Bob Schneider
- **Digital Systems Committee:** James Huntley (Chair), Mel Uchida, Paul Ducasse, Gary Schwiter, Lawrence Byng, Jim Sugg
- **Voice Repeaters Committee:** William Polhemus (Chair), Gary Schwiter, Paul Ducasse, Alan Okinaka
- **Education and Outreach Committee:** Leslie Hittner (Chair), Doug Wilson, Tony Kitchen

Website committee memberships and chairs will be updated.

##### **2. Special Fund concerns**

A discussion took place and some recommendations were offered to the Treasurer, but no action was taken.

#### **E. Other Business**

#### **F. Adjourn**

The meeting was adjourned by William at 1256.

Respectfully submitted,

*Leslie D. Hittner*

Leslie D. Hittner, Secretary

#### **Attachments:**

Operating Statement  
Repeater Fund Summary  
Budgets and Repeater Fund  
Treasurer Accounting for On-Line Dues

PSCC Report  
Digital Systems Report 2021-02-10  
Education and Outreach Report 2021-02-13  
Board Meeting Audio 2021-02-13

## Snippets of note from the ARRL Newsletter

- ARRL Life Member Bob Leo, W7LR, of Bozeman, Montana, turned 100 years old on February 26. He has been a radio amateur for 88 years and is well known as a DXer and DXpeditioner. He has detailed his biography and ham radio exploits on his [QRZ.com profile](#).
- Steve Johnston, WD8DAS, has purchased [AF4K Crystals](#) and plans to reopen it soon. AF4K Crystals was a source for vintage and modern radio crystals for nearly 2 decades. The company will fill a gap for those seeking to buy quartz crystals for various projects.



## Education and Outreach Report

March 2021

The committee did not meet this month.

The updated Membership Handbook will soon be posted to the BIARC website.

I did not offer the BIARC Lending Library carport access this month because of a conflicted schedule.

I would like to schedule a Zoom meeting of the committee in early April.

*Leslie D. Hittner*

Leslie Hittner, KOBAD



## Big Island Amateur Radio Club

### VOAD Monthly Test Net

**When: First Saturday of the month.**

**Time: 12:00pm – 1:00pm HST**

**Frequency: 146.720 neg. offset, 100 tone**

**This is a formal directed net. If you check in, you need to check out if you are not staying until the end. You only speak when directed to by net control. When net control starts calling people for their information, you need to supply the information requested in the proper order and no additional info. Below is an example of the format.**

Call	WH6FQI
First	Jim
location	Keaau
Power	50
antenna	Diamond X50A
Elevation	740 Feet

All amateur radio licensees are invited to join in this monthly net.

Here, BIARC Vice President Jim Huntley shares the parameters and offers tips for successful participation.





## Big Island Amateur Radio Club

### Voice Repeater and Digital Systems Committees Joint Report

1<sup>st</sup> Quarter 2021

A joint committee meeting of the Voice Repeater Committee and Digital System Committee was held on Thursday March 4, 2021. In attendance were the following BIARC Members:

William Polhemus – NH6ET – Voice Repeater Committee Chair

Jim Huntley – WH6FQI – Digital System Committee Chair

Gary Schwiter – WH6EPS – Voice Repeater Committee

Alan Okinaka – KH6ATU – Voice Repeater Committee

Mel Uchida – KH6EKD – Digital Systems Committee

LB Byng – WH6GGO – Digital Systems Committee

Les Hittner – K0BAD – BIARC Secretary

The following topics were discussed:

- Kulani update
  - '76 rework
    - The transmit was moved back to the regular antenna. This provides better coverage, but experiences more interference. The temporary antenna remains in place. William will seek to make it's presence permanent so that it is available to the digital systems committee.
    - The filtering has been reworked seeking to eliminate as much intermodulation as possible.
    - A rusted cable was removed from the tower. This reduced the "popcorn" microarcing type of intermodulation.
  - C4FM repeater has been added and tested.
    - This is on the transmit antenna of the '76 repeater.
    - This is using the old Kau frequency pair – 444.600MHz +5MHz.
- Pepeekeo status
  - The plan is still to migrate the '88 to a different 2M repeater platform, to free up the DR-2X for C4FM use.

- Redeployment of the DR-2X for C4FM is dependent on replacement of the '88 repeater's antenna with a dual band antenna.
  - It may be initially deployed using a lower antenna so that progress may continue.
- C4FM gateways – Les Hittner
  - Les is offering to host up to 3 gateways to get the C4FM repeaters connected until IMRS can happen, and then have them available on the IMRS system for special needs.
  - The Voice Repeater Committee unanimously supports this.
  - The committee asked if Les is willing to be the de facto administrator of the C4FM system for now.
    - Les said that he would be happy to take them on for the club.
  - Interference between the gateways was discussed as a possibility.
    - This will be monitored, and the antenna locations can be adjusted if necessary.
- Pending projects
  - Hamakua repeater coverage extension:
    - Iolehaehae 70cm hub repeater
      - Collocated with William's equipment at that site.
        - There is no room for a 2m duplexer, that's why it will be 70cm.
      - William requested the use of a club MTR2000 for this.
      - A dual band antenna will be deployed to allow for a collocated 2m simplex digital node.
    - This will allow for a hub and spoke linking topology.
      - Iolehaehae has line of sight spanning from Honokaa to Leilani Estates
      - 2m spokes with an option for local only use, to fill in coverage holes in the populated areas; potentially including:
        - Laupahoehoe.
        - Honokaa.
        - Waimea.
        - Lower Puna
      - This would interface well with a Haleakala repeater, which is a distant goal.
      - The '88 repeater in Pepeekeo could be directly linked to the hub.
      - The '76 repeater at Kulani would need a two stage solution to link to the hub.
        - Several good options are available.
  - Kau repeater coverage extension:
    - The discussion with the company who offered the use of a location their field seems to have stalled. We have not had a reply in some time.
    - At present we no longer have access to the old location at the Kau Police Department.
    - There are additional options available. Each has a tradeoff.



- William is recommending that we seek to use the DWS MOU to attain the needed foothold in Kau.
- DWS MOU needs a specific project for further consideration by the DWS board.
  - Need to choose a water tank to move forward with DWS
    - Lanipuna Tank?
      - This is an option which was previously discussed with the DWS staff.
      - This would provide coverage similar to Lopaka's defunct Pahoa repeater, covering behind the LERZ, as well as most of upper Puna, and large parts of Hilo.
      - This would make an ideal location for a cross band repeater to link the '76 repeater to the Laupahoehoe hub repeater.
        - This would also provide cross band coverage in the radio shadow below the LERZ.
    - Haao Springs tank?
      - This was the first site ever discussed with the DWS staff, and they highly support beginning the DWS/BIARC collaboration at this site.
        - DWS would benefit from having BIARC's equipment as a backup power source for their SCADA equipment, as this is a very remote location.
        - Should BIARC ever add digital infrastructure here DWS would benefit from a redundant connection to the site.
      - This site provides coverage from Naalehu to South Point, including all of Discovery Harbor and Waiohinu.
      - This site unfortunately does not cover Pahala.
      - Both committees are recommending proceeding with this site as the first collaboration between DWS and BIARC.
- Backbone infrastructure.
  - William has already been experimenting with the proposed paths using his own equipment.
  - An opportunity has presented itself to collaborate with the State and the County to implement this system in a mutually beneficial topology.
    - This would require a change to the original design, with the addition of a few radios.
    - Instead of a link between Pepeekeo and Kulani cone, there would be a site in the middle, the State Waiakea site.
    - This would necessitate a link from Waiakea to Kulani Cone and a second link from Waiakea to Alala Cone in Pepeekeo.
      - This benefits the State and the County because we can provide a redundant diverse path connection between their microwave systems.
      - This benefits BIARC because puts our hub site in an ultra-modern hardened communications site, with:

- A generator.
  - Multiple battery plants.
  - Fire suppression system,
  - Flood control.
  - An overlapping presence of many additional entities.
    - This positions us to interoperate
    - We may be able to receive an internet connection at this site from another entity, such as UH.
- This melds very well with the other two paths that we have already achieved:
  - Hilo PSB to Alala Cone.
  - Alala Cone to Iolehaehae.
- Relay links and AREDN Mesh.
  - The previous week's meeting with the AREDN Mesh group was discussed.
  - A band/Channelization plan is needed.
    - The use of 900MHz relay links was discussed.
  - With the above described backbone links in place we will be able to tie in the below relay link access points to connect the mesh islands they may serve:
    - Alala Cone in Pepeekeo.
      - There is an unused 900MHz parabolic antenna facing Hilo/Keaau direction which we have been gifted the use of, on an interim basis.
    - Kulani Cone.
      - With the addition of the backbone link dish, one, possibly two 900MHz sectors can be added for APs.
  - PSB
    - There is an unused 900MHz parabolic antenna facing Pepeekeo which we have been gifted the use of, on an interim basis.
  - Waiakea
    - We will only seek to add the backbone links for now. However, APs may be added here in the future.
  - Mauna Loa
    - There are several 900MHz parabolic antennas that were gifted to us here.
      - One facing Pepeekeo/Hilo.
      - Two facing Haleakala.
        - William will see if he can get permission to use the deprecated dishes on Haleakala that these used to connect to – if they are still there.

#### Other infrastructure.

- Jim will take on the project of adding the old Kau solar panels to the Mauna Loa repeater.



**BIARC Digital Committee  
Report for  
March 2021  
Board meeting**

The combination Repeater/Digital Committee meeting was helpful in giving some direction. The items mentioned in the meeting and subsequent conversations afterwards are listed below.

- Receive only iGate for down south. (Possible SDR based)
- Mauna Loa DMR Repeater monitor using a Pi to do APRS, Battery volt, battery temp, Ambient or outside Temperatures
- Packet Node or VARA repeater for Kulani
- AIS Ship tracking at proposed site on Hamakua coast (Gary request)
- ADS B, unspecified location.

A site survey of the Mauna Loa location will be done Monday, barring any significant bad weather. This will be done by Gary of the repeater committee and my self representing the digital committee. Pictures and measurements will be taken to consider solar panel, battery, and monitoring Pi placement. Additionally, a possible antenna location for APRS. This would allow transmission of telemetry even if the internet goes down. We can use one of the 8 digital bits to indicate the status of the internet connection being up or down.

Jim Huntley  
Digital Committee Chair

**BIARC - Repeater Fund Summary**  
As of: 03/10/2021

<u>Year</u>	<u>BIARC Equipment Budget</u>	<u>Donations (Credit)</u>	<u>Equipment Purchases &amp; Maintenance Costs</u>	<u>\$ Covered By Repeater Fund</u>	<u>Repeater Fund Balance</u>
2017	\$600.00	\$273.00	\$932.75	\$332.75	-\$59.75
2018	\$1,000.00	\$235.00	\$266.98	\$0.00	\$175.25
2019	\$500.00	\$255.00	None	\$0.00	\$430.25
2020	\$500.00	\$501.72	\$436.78	\$0.00	\$931.97
2021	\$600.00	\$865.00	\$168.39	\$0.00	\$1,796.97

**Notes:** This fund holds amounts donated by club members to be used for repeater maintenance & upgrades.

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## **Public Service Communications Committee Update**

March 10, 2021

**The Public Service Communications Committee is the liaison between Public Service agencies, Public Safety Agencies and BIARC. This committee shall seek input from other community groups and individuals and makes recommendations to the Executive Board regarding activities pertaining to public service provided by the club.]**

### **Note to All Amateur Radio Stations:**

If you have ideas, advise, or other input, please reach out to us. In addition to improving our own stations and technical capabilities, it is important for participants in the Amateur Radio Service to build awareness of our capabilities and intentions within our communities. Our goal is to build good relationships with businesses, academia, and government agencies as well as the public. The members of all BIARC committees are listed at <http://biarc.net/committees.shtml>. Please reach out to us with any ideas or projects you may have.

### **American Red Cross Training Exercises:**

The nationwide and Hawaii State ARES efforts continue to prepare amateur radio operators to assist the ARC in emergency communications. The latest exercise took place on Thursday, March 11<sup>th</sup>. Visit the National Groups' page at <https://arc-emcomm-training.groups.io/g/main> and click on the messages link to get caught up on the exercises so far, and informed about upcoming events.

### **Hawaii Voluntary Organizations Active in Disaster: (HVOAD)**

The monthly VOAD net continues on the first Saturday of each month on the Maunakea repeater, from 12 Noon to 1 PM. All amateur radio stations are invited to participate. The repeater will be activated on the frequency of 146.720 MHz, 600 kHz Negative Offset, PL tone 100. This is a directed net with all traffic being directed through the net control.

Please check-in as directed by net control, using [ITU phonetics and proper net protocol](#). When Net Control asks for your report, provide the information requested, nothing more, nothing less. An example of the typical information requested appears below. Pay close attention as the goal is to provide exactly what information is requested by net control, in the order it is requested.

A typical report would consist of the following information:



1. Your first Name
2. Your community. (Town, Village, Sub-division)
3. Transmission power (Watts)
4. Antenna make/model
5. Antenna elevation above mean sea level

**Example:**

This is WH6XXX, Joe in Hawaiian Paradise Park.

Power: 50 Watts

Antenna: Diamond X50 NA

Elevation: 125'

WH6XXX

A good practice is to write down exactly what you need to say before you are called upon to say it. Speak slowly so net control has time to write down what you say. This will allow all stations the opportunity to check in during the brief one-hour period that the repeater is activated.

It is worthwhile to copy down the check-ins and reports of other stations as they are given. Make a note of which stations you were able to copy clearly, and which stations were problematic. A proficient operator is able to listen to another station on the repeater or on the input frequency and provide net control with a relay of the report when requested. If you are a more experienced operator, please try to reach out after the net to stations having difficulty in your area and provide suggestions and assistance.

**Big Island Monthly Siren Net:**

The next monthly siren net will be held Thursday, April 1<sup>st</sup>, starting at 11:30 AM. John, WH6FSI from Papaaloa will be handling net control. Please visit the website at <https://nh6tu.org/forms/BigIslandMonthlySirenNet.pdf> for details.

These nets are our opportunity to show our proficiency in using best practices during a formal emergency communications net.

73

Tony Kitchen, WH6DVI

Chair, BIARC Public Service Communication Committee

Tony Kitchen808@gmail.com

## BIARC 2021 Budget & Operating Statement

	<u>2021 Budget</u>	<u>Actual– 1/1/2021 To 3/10/2021</u>
<b>Income:</b>		
Dues	\$1,500.00	\$1,210.00
Repeater Fund Donations	\$500.00	\$865.00
On-line Payment Fees*		\$11.65
<b>Total Income</b>	<b><u>\$2,000.00</u></b>	<b><u>\$2,086.65</u></b>
<b>Expenses:</b>		
Club Liability Insurance	\$325.00	\$0.00
Club Equipment Insurance	\$200.00	\$0.00
Donations (PCC)	\$25.00	\$0.00
Equipment	\$600.00	\$168.39
Field Day	\$370.00	\$0.00
Printing (Membership Booklet)	\$100.00	\$0.00
Annual Build Project	\$50.00	\$0.00
P. O. Box Fee	\$190.00	\$0.00
VOAD Dues	\$50.00	\$25.00
Office Supplies/Bank Fee/Misc.	\$40.00	\$0.00
Website Costs	\$50.00	\$0.00
<b>Total Expenses</b>	<b><u>\$2,000.00</u></b>	<b><u>\$193.39</u></b>
<b>Excess (Deficit)</b>		<b><u>\$1,893.26</u></b>
 <b>Bank of Hawaii Balance</b>		
	as of: 3/10/2021	<b><u>\$4,194.95</u></b>
Deposit Pending		\$210.00
Namecheap Balance		\$11.96
Paypal Account Balance		\$967.24
 <b>Fund Balances: (3/10/2021)</b>		
Repeater Fund	\$1,796.97	
Emergency Reserves	\$1,000.00	
General Fund	\$2,587.18	
<b>Total Funds</b>	<b><u>\$5,384.15</u></b>	

\* 10% Convenience fee for on-line dues payments minus processing fees.